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SEQUENCE LISTING



Al
<110> Fisher, Joseph
 Lorens, James
 Payan, Donald
 Rossi, Alexander

<120> Multiparameter Facs Assays to Detect Alterations in
 Cellular Parameters and to Screen Small Molecule
 Libraries

<130> A68104/DJB/RMS/DAV

<140> 09/293,670

<141> 1999-04-16

<160> 57

<170> PatentIn Ver. 2.0

<210> 1

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<400> 1

Lys Arg Arg Gln Thr Ser Met Thr Ser Met Thr Asp Phe Tyr His Ser
1 5 10 15

Lys Arg Arg Leu Ile Phe Ser Lys Arg Lys Pro
 20 25

<210> 2

<211> 27

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<400> 2

Lys Arg Arg Gln Thr Ser Ala Thr Ser Met Ala Ala Phe Tyr His Ser
1 5 10 15

Lys Arg Arg Leu Ile Phe Ser Lys Arg Lys Pro
20 25

<210> 3
<211> 9
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 <400> 3
Arg Thr Val Leu Gly Val Ile Gly Asp
1 5

<210> 4
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<212> PRT
<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<400> 4
Arg Thr Ala Leu Gly Asp Ile Gly Asn
1 5

<210> 5
<211> 27
<212> PRT
<213> Rat

<400> 5
Tyr Met Thr Val Ser Ile Ile Asp Arg Phe Met Gln Asp Ser Cys Val
1 5 10 15

Pro Lys Lys Met Leu Gln Leu Val Gly Val Thr
20 25

<210> 6
<211> 28
<212> PRT
<213> Mouse

<400> 6

Lys Phe Arg Leu Leu Gln Glu Thr Met Tyr Met Thr Val Ser Ile Ile
1 5 10 15

Asp Arg Phe Met Gln Asn Ser Cys Val Pro Lys Lys
20 25

<210> 7

<211> 27

<212> PRT

<213> Mouse

<400> 7

Arg Ala Ile Leu Ile Asp Trp Leu Ile Gln Val Gln Met Lys Phe Arg
1 5 10 15

Leu Leu Gln Glu Thr Met Tyr Met Thr Val Ser
20 25

<210> 8

<211> 27

<212> PRT

<213> Mouse

<400> 8

Asp Arg Phe Leu Gln Ala Gln Leu Val Cys Arg Lys Lys Leu Gln Val
1 5 10 15

Val Gly Ile Thr Ala Leu Leu Leu Ala Ser Lys
20 25

<210> 9

<211> 18

<212> PRT

<213> Mouse

<400> 9

Met Ser Val Leu Arg Gly Lys Leu Gln Leu Val Gly Thr Ala Ala Met
1 5 10 15

Leu Leu

<210> 10

<211> 61
<212> PRT
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<223> Description of Artificial Sequence: synthetic

<300>

<303> EMBO J.

<304> 13

<305> 22

<306> 5303-5309

<307> 1994

<400> 10

Met Gly Cys Ala Ala Leu Glu Ser Glu Val Ser Ala Leu Glu Ser Glu
1 5 10 15

Val Ala Ser Leu Glu Ser Glu Val Ala Ala Leu Gly Arg Gly Asp Met
20 25 30

Pro Leu Ala Ala Val Lys Ser Lys Leu Ser Ala Val Lys Ser Lys Leu
35 40 45

Ala Ser Val Lys Ser Lys Leu Ala Ala Cys Gly Pro Pro
50 55 60

<210> 11
<211> 6
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 11

Gly Arg Gly Asp Met Pro
1 5

<210> 12
<211> 69
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 12

Met Gly Arg Asn Ser Gln Ala Thr Ser Phe Gly Thr Phe Ser His Phe
1 5 10 15

Tyr Met Glu Trp Val Arg Gly Gly Glu Tyr Ile Ala Ala Ser Arg His
20 25 30

Lys His Asn Lys Tyr Thr Thr Glu Tyr Ser Ala Ser Val Lys Gly Arg
35 40 45

Tyr Ile Val Ser Arg Asp Thr Ser Gln Ser Ile Leu Tyr Leu Gln Lys
50 55 60

Lys Lys Gly Pro Pro
65

<210> 13

<211> 7

<212> PRT

<213> Monkey virus

<300>

<301> Kalderon et al.,

<303> Cell

<304> 39

<306> 499-509

<307> 1984

<400> 13

Pro Lys Lys Lys Arg Lys Val
1 5

<210> 14

<211> 6

<212> PRT

<213> Homo sapiens

<400> 14

Ala Arg Arg Arg Arg Pro
1 5

<210> 15

<211> 10

<212> PRT

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<220>

<223> Description of Artificial Sequence: synthetic

<300>

<301> Ghosh et al.,

<303> Cell

<304> 62

<306> 1019-

<307> 1990

<400> 15

Glu Glu Val Gln Arg Lys Arg Gln Lys Leu

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<210> 16

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<300>

<301> Nolan et al.,

<303> Cell

<304> 64

<305> 961

<307> 1991

<400> 16

Glu Glu Lys Arg Lys Arg Thr Tyr Glu

1

5

<210> 17

<211> 20

<212> PRT

<213> African clawed toad

<300>

<301> Dingwell et al.,

<303> Cell

<304> 30

<306> 449-458

<307> 1982

<300>

<301> Dingwell et al.,

<303> J. Cell Biol.

<304> 107

<306> 641-849

<307> 1988

<400> 17

Ala Val Lys Arg Pro Ala Ala Thr Lys Lys Ala Gly Gln Ala Lys Lys

1

5

10

15

Lys Lys Leu Asp

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<210> 18

<211> 31

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<300>

<301> Nakauchi et al.,

<303> Proc. Natl. Acad. Sci. U.S.A.

<304> 82

<306> 5126-

<307> 1985

<400> 18

Met Ala Ser Pro Leu Thr Arg Phe Leu Ser Leu Asn Leu Leu Leu Leu

1

5

10

15

Gly Glu Ser Ile Leu Gly Ser Gly Glu Ala Lys Pro Gln Ala Pro

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<210> 19

<211> 22

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<300>

<301> Staunton et al.,
<303> Nature
<304> 339
<306> 61-
<307> 1989

<400> 19
Met Ser Ser Phe Gly Tyr Arg Thr Leu Thr Val Ala Leu Phe Thr Ile
1 5 10 15

Leu Ile Cys Cys Pro Gly
. 20

<210> 20
<211> 51
<212> PRT
<213> Artificial Sequence

<220>
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<300>
<301> Nakauchi et al.,
<303> Proc. Natl. Acad. Sci. U.S.A.
<304> 82
<306> 5126-
<307> 1985

<400> 20
Pro Gln Arg Pro Glu Asp Cys Arg Pro Arg Gly Ser Val Lys Gly Thr
1 5 10 15

Gly Leu Asp Phe Ala Cys Asp Ile Tyr Ile Trp Ala Pro Leu Ala Gly
20 25 30

Ile Cys Val Ala Leu Leu Leu Ser Leu Ile Ile Thr Leu Ile Cys Tyr
35 40 45

His Ser Arg
50

<210> 21
<211> 33
<212> PRT
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<220>

<223> Description of Artificial Sequence: synthetic

<300>

<301> Staunton et al.,

<303> Nature

<304> 339

<306> 61-

<307> 1989

<400> 21

Met Val Ile Ile Val Thr Val Val Ser Val Leu Leu Ser Leu Phe Val

1

5

10

15

Thr Ser Val Leu Leu Cys Phe Ile Phe Gly Gln His Leu Arg Gln Gln

20

25

30

Arg

<210> 22

<211> 37

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<300>

<301> Homans et al.,

<303> Nature

<304> 333

<305> 6170

<306> 269-272

<307> 1988

<300>

<303> J. Biol. Chem.

<304> 266

<306> 1250-

<307> 1991

<400> 22

Pro Asn Lys Gly Ser Gly Thr Thr Ser Gly Thr Thr Arg Leu Leu Ser

1

5

10

15

Gly His Thr Cys Phe Thr Leu Thr Gly Leu Leu Gly Thr Leu Val Thr

Met Gly Leu Leu Thr

35

<210> 23

<211> 14

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<300>

<303> Mol. Cell. Biol.

<304> 4

<305> 9

<306> 1834-

<307> 1984

<300>

<303> Science

<304> 262

<306> 1019-1024

<307> 1993

<400> 23

Met Gly Ser Ser Lys Ser Lys Pro Lys Asp Pro Ser Gln Arg

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5

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<210> 24

<211> 26

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<300>

<303> J. Biol. Chem.

<304> 269

<306> 27791-

<307> 1994

<400> 24

Leu Leu Gln Arg Leu Phe Ser Arg Gln Asp Cys Cys Gly Asn Cys Ser

1 5 10 15
 Asp Ser Glu Glu Glu Leu Pro Thr Arg Leu
 20 25

<210> 25
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 <213> Artificial Sequence

<220>
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<300>
 <303> J. Mol. Neurosci.
 <304> 5
 <305> 3
 <306> 207-
 <307> 1994

<400> 25
 Lys Gln Phe Arg Asn Cys Met Leu Thr Ser Leu Cys Cys Gly Lys Asn
 1 5 10 15

Pro Leu Gly Asp
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<210> 26
 <211> 19
 <212> PRT
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<220>
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<300>
 <303> Nature
 <304> 302
 <306> 33-
 <307> 1983

<400> 26
 Leu Asn Pro Pro Asp Glu Ser Gly Pro Gly Cys Met Ser Cys Lys Cys
 1 5 10 15

Val Leu Ser

<210> 27
<211> 5
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Ann. N. Y. Acad. Sci.
<304> 674
<306> 58-
<307> 1992

<400> 27
Lys Phe Glu Arg Gln
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<210> 28
<211> 36
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Cell. Mol. Biol. Res.
<304> 41
<306> 405-
<307> 1995

<400> 28
Met Leu Ile Pro Ile Ala Gly Phe Phe Ala Leu Ala Gly Leu Val Leu
1 5 10 15

Ile Val Leu Ile Ala Tyr Leu Ile Gly Arg Lys Arg Ser His Ala Gly
20 25 30

Tyr Gln Thr Ile
35

<210> 29

<211> 35
<212> PRT
<213> Artificial Sequence

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<300>
<303> Biochem. Biophys. Res. Commun.
<304> 205
<306> 1-5
<307> 1994

<400> 29
Leu Val Pro Ile Ala Val Gly Ala Ala Leu Ala Gly Val Leu Ile Leu
1 5 10 15
Val Leu Leu Ala Tyr Phe Ile Gly Leu Lys His His His Ala Gly Tyr
20 25 30

Glu Gln Phe
35

<210> 30
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Eur. J. Biochem.
<304> 165
<306> 1-6
<307> 1987

<400> 30
Met Leu Arg Thr Ser Ser Leu Phe Thr Arg Arg Val Gln Pro Ser Leu
1 5 10 15
Phe Ser Arg Asn Ile Leu Arg Leu Gln Ser Thr
20 25

<210> 31
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<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<300>

<303> Eur. J. Biochem.

<304> 165

<306> 1-6

<307> 1987

<400> 31

Met Leu Ser Leu Arg Gln Ser Ile Arg Phe Phe Lys Pro Ala Thr Arg
1 5 10 15

Thr Leu Cys Ser Ser Arg Tyr Leu Leu
20 25

<210> 32

<211> 64

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<300>

<303> Eur. J. Biochem.

<304> 165

<306> 1-6

<307> 1987

<400> 32

Met Phe Ser Met Leu Ser Lys Arg Trp Ala Gln Arg Thr Leu Ser Lys
1 5 10 15

Ser Phe Tyr Ser Thr Ala Thr Gly Ala Ala Ser Lys Ser Gly Lys Leu
20 25 30

Thr Gln Lys Leu Val Thr Ala Gly Val Ala Ala Ala Gly Ile Thr Ala
35 40 45

Ser Thr Leu Leu Tyr Ala Asp Ser Leu Thr Ala Glu Ala Met Thr Ala
50 55 60

<210> 33
<211> 41
<212> PRT
<213> Artificial Sequence

<220>
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<300>
<303> Eur. J. Biochem.
<304> 165
<306> 1-6
<307> 1987

<400> 33
Met Lys Ser Phe Ile Thr Arg Asn Lys Thr Ala Ile Leu Ala Thr Val
1 5 10 15

Ala Ala Thr Gly Thr Ala Ile Gly Ala Tyr Tyr Tyr Tyr Asn Gln Leu
20 25 30

Gln Gln Gln Gln Gln Arg Gly Lys Lys
35 40

<210> 34
<211> 4
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<213> Artificial Sequence

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<300>
<303> Royal Society London Transaction B
<306> 1-10
<307> 19992

<400> 34
Lys Asp Glu Leu
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<210> 35
<211> 15

<212> PRT
<213> adenovirus

<300>
<303> EMBO J.
<304> 9
<306> 3153-
<307> 1990

<400> 35
Leu Tyr Leu Ser Arg Arg Ser Phe Ile Asp Glu Lys Lys Met Pro
1 5 10 15

<210> 36
<211> 19
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Nature
<304> 302
<306> 33-
<307> 1983

<400> 36
Leu Asn Pro Pro Asp Glu Ser Gly Pro Gly Cys Met Ser Cys Lys Cys
1 5 10 15

Val Leu Ser

<210> 37
<211> 15
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Proc. Natl. Acad. Sci. U.S.A.
<304> 91
<306> 11963-

<307> 1994

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Leu Thr Glu Pro Thr Gln Pro Thr Arg Asn Gln Cys Cys Ser Asn
1 5 10 15

<210> 38

<211> 9

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

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<304> 1

<306> 13053-

<307> 1996

<400> 38

Arg Thr Ala Leu Gly Asp Ile Gly Asn
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<210> 39

<211> 29

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<300>

<303> Nucleic Acids Res.

<304> 7

<306> 30-

<307> 1979

<400> 39

Met Ala Thr Gly Ser Arg Thr Ser Leu Leu Leu Ala Phe Gly Leu Leu
1 5 10 15

Cys Leu Pro Gln Leu Gln Glu Gly Ser Ala Phe Pro Thr
20 25

<210> 40
<211> 27
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Nature
<304> 284
<306> 26-
<307> 1980

<400> 40
Met Ala Leu Trp Met Arg Leu Leu Pro Leu Leu Ala Leu Leu Ala Leu
1 5 10 15

Trp Gly Pro Asp Pro Ala Ala Ala Phe Val Asn
20 25

<210> 41
<211> 18
<212> PRT
<213> Artificial Sequence

<220>
<223> Description of Artificial Sequence: synthetic

<300>
<303> Proc. Natl. Acad. Sci. U.S.A.
<304> 80
<306> 3563-

<400> 41
Met Lys Ala Lys Leu Leu Val Leu Leu Tyr Ala Phe Val Ala Gly Asp
1 5 10 15

Gln Ile

<210> 42
<211> 24
<212> PRT
<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 42

Met Gly Leu Thr Ser Gln Leu Leu Pro Pro Leu Phe Phe Leu Leu Ala
1 5 10 15

Cys Ala Gly Asn Phe Val His Gly
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<210> 43

<211> 10

<212> PRT

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<223> The x at position 3, 4, 5 and 6 represents any
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<220>

<223> Description of Artificial Sequence: synthetic

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Met Gly Xaa Xaa Xaa Xaa Gly Gly Pro Pro
1 5 10

<210> 44

<211> 5

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 44

Gly Ser Gly Gly Ser
1 5

<210> 45

<211> 4

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 45

Gly Gly Gly Ser

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<210> 46

<211> 43

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 46

gacgggatcc accaccatgg gctcagaacc ggctggggat gtc

43

<210> 47

<211> 79

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

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gaagatcagc cggcgtttg

79

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<211> 81

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<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 48

gatcccacca ccatgggcaa acggcggcag accagcatga cagatttcta ccatctccaa 60

acgcgggctg atcttctcca a

81

<210> 49

<211> 80

<212> DNA

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<220>

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gatcccaatt taaatggttt tatttgtcat cgtcatcctt gtagtcgggc ttctcttgg 60
agaagatcag ccggcgtttg 80

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<212> DNA

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<223> Description of Artificial Sequence: synthetic

<400> 50

atcggatcca ccaccatggg caaacggcgg cagaccagcg ccacagctgc ctaccactcc 60

<210> 51

<211> 79

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 51

gatcccaatt taatggtttt atttgtcatc gtcacacctg tagtcgggct tcctcttgga 60
gaagatcagc cggcgtttg 79

<210> 52

<211> 365

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 52

Met Gly Ser Ala Thr Ala Ala Thr Val Pro Pro Ala Ala Pro Ala Gly
1 5 10 15

Glu Gly Gly Pro Pro Ala Pro Pro Pro Asn Leu Thr Ser Asn Arg Arg
20 25 30

Leu Gln Gln Thr Gln Ala Gln Val Asp Glu Val Val Asp Ile Met Arg
35 40 45

Val Asn Val Asp Lys Val Leu Glu Arg Asp Gln Leu Ser Glu Leu Asp
 50 55 60

Asp Arg Ala Asp Ala Leu Gln Ala Gly Ala Ser Gln Phe Glu Thr Ser
 65 70 75 80

Ala Ala Lys Leu Lys Arg Lys Tyr Trp Trp Lys Asn Leu Met Met Ile
 85 90 95

Ile Leu Gly Val Ile Cys Ala Ile Ile Leu Ile Ile Ile Ile Val Tyr
 100 105 110

Phe Ser Thr Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Gly Pro Val
 115 120 125

Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu Val Glu
 130 135 140

Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly Glu Gly
 145 150 155 160

Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile Cys Thr
 165 170 175

Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr Leu Thr
 180 185 190

His Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys Gln His
 195 200 205

Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu Arg Thr
 210 215 220

Ile Phe Phe Lys Asp Asp Gly Asn Tyr Thr Arg Ala Glu Val Lys Phe
 225 230 235 240

Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile Asp Phe
 245 250 255

Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn Phe Asn
 260 265 270

Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile Lys
 275 280 285

Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln Leu
 290 295 300

Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val Leu
305 310 315 320

Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys Asp
325 330 335

Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val Thr Ala
340 345 350

Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Glx
355 360 365

<210> 53

<211> 16

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 53

Gly Ser Gly Ser Ile Glu Gly Arg Leu Arg Lys Gln Gly Ser Cys Ser
1 5 10 15

<210> 54

<211> 477

<212> PRT

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence: synthetic

<400> 54

Met Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
1 5 10 15

Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
20 25 30

Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
35 40 45

Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
50 55 60

Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys

325 330 335
 Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu Val
 340 345 350
 Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly Ile
 355 360 365
 Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr Asn
 370 375 380
 Phe Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn Gly Ile
 385 390 395 400
 Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser Val Gln
 405 410 415
 Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly Pro Val
 420 425 430
 Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser Lys
 435 440 445
 Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Val Thr Ala
 450 455 460
 Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Glx
 465 470 475

<210> 55

<211> 607

<212> PRT

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<223> Description of Artificial Sequence: synthetic

<400> 55

Gly Ser Ala Thr Ala Ala Thr Val Pro Pro Ala Ala Pro Ala Gly Glu
 1 5 10 15

Gly Gly Pro Pro Ala Pro Pro Pro Asn Leu Thr Ser Asn Arg Arg Leu
 20 25 30

Gln Gln Thr Gln Ala Gln Val Glu Asp Glu Val Val Asp Ile Met Arg
 35 40 45

Val Asn Val Asp Lys Val Leu Glu Arg Asp Gln Lys Leu Ser Glu Leu
 50 55 60
 Asp Asp Arg Ala Asp Ala Leu Gln Ala Gly Ala Ser Gln Phe Glu Thr
 65 70 75 80
 Ser Ala Ala Lys Leu Lys Arg Lys Tyr Trp Trp Lys Asn Leu Lys Met
 85 90 95
 Met Ile Leu Leu Gly Val Ile Cys Ala Ile Ile Leu Val Ile Ile Ile
 100 105 110
 Val Tyr Phe Ser Thr Gly Ser Gly Ser Gly Ser Gly Ser Gly Ser Gly
 115 120 125
 Pro Val Ser Lys Gly Glu Glu Leu Phe Thr Gly Val Val Pro Ile Leu
 130 135 140
 Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser Gly
 145 150 155 160
 Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Phe Ile
 165 170 175
 Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr Thr
 180 185 190
 Leu Thr His Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met Lys
 195 200 205
 Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln Glu
 210 215 220
 Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala Glu
 225 230 235 240
 Val Lys Phe Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
 245 250 255
 Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
 260 265 270
 Asn Phe Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
 275 280 285
 Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
 290 295 300

Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
 305 310 315 320
 Pro Val Leu Leu Pro Asp Asn His Tyr Leu Ser Thr Gln Ser Ala Leu
 325 330 335
 Ser Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe
 340 345 350
 Val Thr Ala Ala Gly Ser Gly Ser Ile Glu Gly Arg Arg Lys Leu Gln
 355 360 365
 Gly Ser Gly Ser Lys Gly Glu Glu Leu Thr Phe Gly Val Val Pro Ile
 370 375 380
 Leu Val Glu Leu Asp Gly Asp Val Asn Gly His Lys Phe Ser Val Ser
 385 390 395 400
 Gly Glu Gly Glu Gly Asp Ala Thr Tyr Gly Lys Leu Thr Leu Lys Ile
 405 410 415
 Phe Cys Thr Thr Gly Lys Leu Pro Val Pro Trp Pro Thr Leu Val Thr
 420 425 430
 Thr Leu Thr Tyr Gly Val Gln Cys Phe Ser Arg Tyr Pro Asp His Met
 435 440 445
 Lys Gln His Asp Phe Phe Lys Ser Ala Met Pro Glu Gly Tyr Val Gln
 450 455 460
 Glu Arg Thr Ile Phe Phe Lys Asp Asp Gly Asn Tyr Lys Thr Arg Ala
 465 470 475 480
 Glu Val Lys Glu Gly Asp Thr Leu Val Asn Arg Ile Glu Leu Lys Gly
 485 490 495
 Ile Asp Phe Lys Glu Asp Gly Asn Ile Leu Gly His Lys Leu Glu Tyr
 500 505 510
 Asn Tyr Asn Ser His Asn Val Tyr Ile Met Ala Asp Lys Gln Lys Asn
 515 520 525
 Gly Ile Lys Val Asn Phe Lys Ile Arg His Asn Ile Glu Asp Gly Ser
 530 535 540
 Val Gln Leu Ala Asp His Tyr Gln Gln Asn Thr Pro Ile Gly Asp Gly
 545 550 555 560

Pro Val Leu Leu Pro Asn His Tyr Leu Ser Thr Gln Ser Ala Leu Ser
565 570 575

Lys Asp Pro Asn Glu Lys Arg Asp His Met Val Leu Leu Glu Phe Val
580 585 590

Thr Ala Ala Gly Ile Thr Leu Gly Met Asp Glu Leu Tyr Lys Glx
595 600 605

<210> 56

<211> 20

<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<400> 56

Met Tyr Arg Met Gln Leu Leu Ser Cys Ile Ala Leu Ser Leu Ala Leu
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Val Thr Asn Ser
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<212> PRT

<213> Artificial Sequence

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<223> Description of Artificial Sequence: synthetic

<400> 57

Lys Arg Arg Gln Thr Ser Ala Thr Ala Ala Tyr His Ser Arg Arg Leu
1 5 10 15

Ile Phe Ser Lys Arg Lys Pro
20